Ontario

A Beef Feedlot Farm Example:

Your Livestock Operation Under the Nutrient Management Act, 2002

Ministry of Agriculture, Food and Rural Affairs
Publication 825

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Introduction

This booklet is part of a series of livestock information books developed to help farmers understand the implications of the Nutrient Management Act, 2002 and the associated regulations and protocols. The act addresses how nutrients, including manure, are managed while they are stored and applied to farmland for the purpose of growing agricultural crops.

For more information, or to see all of the titles in this series, visit the OMAFRA Web site at **www.omafra.gov.on.ca** or call the Agricultural Information Contact Centre at 1-877-424-1300.

For more information on provincial acts and regulations, visit the Ontario Statutes and Regulations Web site at **www.e-laws.gov.on.ca**. You can access the applicable forms online at **www.gov.on.ca**.

The farm operation information used in this booklet is not based on any existing farming operation and is for demonstration purposes only.

Some Common Acronyms

The Nutrient Management Act, 2002 brought with it new terms that have quickly become common, and are usually abbreviated. These include:

Manure Storage Software Program	MSTOR
Minimum Distance Separation	MDS
Nutrient Management Act, 2002	NMA or act
Nutrient Management Computer Program	NMAN
Nutrient Management Strategy	NMS
Nutrient Management Plan	NMP
Nutrient Unit	NU
Nutrient Management Act, 2002 General Regulation	O. Reg. 267/03 or the regulation

Farmers planning to apply for a building permit for a livestock barn and/or permanent manure storage, and those with large operations, need to be aware of the recent nutrient management legislation. This booklet reviews two key documents – the Nutrient Management Strategy (NMS) and the Nutrient Management Plan (NMP) – and the requirements that must be met in order to obtain approval of the NMS and/or NMP (NMS/P). An NMS/P will assist the agricultural operator in managing nutrients in a way that will be environmentally friendly and economically viable. An approved NMS/P can be used in the process of obtaining a building permit for a new or expanding nutrient storage facility. Many of the requirements in the regulation do not come into force until the farmer is required to have an NMS or NMP.

Nutrient Units and Compliance Schedule

All farms planning on building a barn or manure storage (including earthern storage) located within 100 m (328 ft) of a municipal well or applying non-agricultural source materials (NASM) are now affected by the NMA. In addition, farms ≥ 300 NU are also affected by the act. The size of the agricultural operation is determined by the number of nutrient units (NUs) on that agricultural operation. An NU is defined as having the fertilizer equivalent of 43 kg of nitrogen or 55 kg of phosphorus (whichever is lower). NUs were created to enable the fair comparison of various nutrient types including agricultural, non-agricultural and commercial products (in essence an apples-to-apples comparison). A farm is defined as land no smaller than a single deed that meets the requirements of section 5 of the regulation.

How does the Nutrient Management Act, 2002, affect farmers?

The table below provides examples of the number of animals needed to make one NU. A complete listing for a variety of livestock can be found in the Farm Unit Declaration Form in the Appendices Section.

Number of Animals per Nutrient Unit on Farm Units Generating Manure

Type of Animal	Nutrient Units (animals/ NU)
Beef Cows – Includes calves to weaning	1.0
Beef Shortkeep (12.5 – 17.5 months)	2.0
Beef Backgrounders (7 – 12.5 months)	3.0
Beef Feeders (7-16 months)	3.0
Chicken Broilers (8 week cycle)	351
Chicken Broilers (9 week cycle)	300
Chicken Broilers (10 week cycle)	250
Chicken Broilers (12 week cycle)	100
Chicken – Broiler Breeder Growers (females + males transferred out)	300
Chicken – Broiler Breeder Layers (females + males transferred in)	100
Dairy Cow – Milking Age Large Frame	0.7
Dairy Heifers – Large Frame	2.0
Dairy Calves – Large Frame	6.0
Horses – Large Frame	0.7
Horses – Medium Frame	1.0
Horses – Small Frame	2.0
Sheep – Meat Ewes and Rams (including unweaned offspring and replacements)	8.0
Sheep –Feeder Lambs	20.0
Sheep - Dairy Ewes and Rams (including unweaned offspring and replacements)	6.0
Swine Feeders	6.0
Swine Sows – Dry and Boars Non-SEW	3.5
Swine Sows – Dry and Boars SEW	3.33
Swine Sows – With Litters Non-SEW	3.5
Swine Sows – With Litters SEW	3.33
Swine – Weaners Non-SEW	20.0
Swine – Weaners SEW	20.0
Turkey – Toms > 10.8 kg	76
NOTE: For animals not listed on the chart above, the number of animals per nutrient unit can be calculated by determining the number of animals that will produce the amount of nutrients that give the fertilizer replacement value of the lower of 43 kilograms of nitrogen or 55 kilograms of phosphate as nutrient.	

Nutrient Management Strategy and Nutrient Management Plan

The focus of the new *Act* is the requirement for a NMS/P.

An NMS describes the generation, storage and destination of the nutrients produced. Essentially, in completing a NMS, farmers answer the questions "How much manure is being produced?", "How is the manure stored?" and "Where is the manure to go?" People who own or control a livestock operation that has been phased-in must complete a NMS.

An NMP determines the details of how the generated nutrients (i.e., manure) are to be applied to a given land base. The NMP optimizes the application of nutrients to crops and enhances protection for ground and surface water.

All farm units ≥ 300 NU, and within 100 m of a municipal well, that generate nutrients and apply those nutrients to the land must prepare a NMP once the farm unit has been phased-in under the NMA.

An NMP determines the rate and timing of application of manure based on a number of different factors. These factors include:

- existing soil nutrient levels as determined through soil testing at an OMAFRA-accredited lab;
- nutrient content of the manure as determined through testing or book values;
- crops to be grown in the next five years;
- crops grown on the land in the past year;
- soil type and slope of the land;
- tillage practices used;
- method and timing of manure application;
- manure applications over the past three years; and
- proximity to surface water, including wells.

Completion of the NMS and NMP

There are two ways to complete an NMS/P. You can either complete the documents yourself or hire a certified consultant. Any person who prepares the NMS/P will need provincial certification.

Do It Yourself

There are several tools that can help you complete an NMS/P, two of which are:

- NMAN Software – a computer program developed by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) that contains all of the forms and calculations necessary for a complete NMS/P, with the exception of the required sketches. OMAFRA offers training on how to complete a strategy or plan that includes using the NMAN software.
- NMAN Workbook – a paper version of the key elements of the NMAN program. OMAFRA offers a training course on the theory and science behind NMAN and the NMAN workbook with an opportunity to use this tool. The software does provide greater detail in some areas.

To complete your NMS and/or NMP, you will need some additional forms (e.g., Farm Unit Declaration, Nutrient Management Strategy and/or Plan Sign-Off, Engineer's Commitment Certficiate). These can be accessed at **www.gov.on.ca**.

You may choose to use another software application. However, OMAFRA only offers technical support for NMAN software.

Farmers who choose to do their own NMS/P must obtain the following certificate:

Certificate Title	For	Timeline
Agricultural Operation Planning Certificate	Agricultural operators who plan to prepare their own NMS/P	Must be certified before submitting their strategy or plan for approval

A list of the necessary courses, dates and locations are available by calling the Agricultural Information Contact Centre (AICC) at 1-877-424-1300 or from the OMAFRA Web site at **www.omafra.gov.on.ca**.

Hire a Consultant

Many farmers hire consultants to complete their NMS/P on a fee-for-service basis. Anyone completing plans and strategies for others must be certified by OMAFRA. A list of consultants that are certified by OMAFRA can be obtained by contacting the AICC at 1-877-424-1300 or from the OMAFRA Web site at **www.omafra.gov.on.ca**.

Consultant fees will vary, depending on the complexity of the situation and the acreage involved. Plans must be updated every five years and reviewed on an annual basis.

If events listed in section 22 or 26 of the regulation occur to the operation prior to the five-year mark, then the NMS/P must be updated. Minor changes to a strategy or plan (e.g., fall spreading versus spring spreading) must be documented and require the farm operator to update the NMS/P to ensure the appropriate utilization of the manure.

Regardless of who completes the NMS/P, it is the responsibility of the farmer to ensure that the NMS/P is implemented and that all nutrient application activities are documented.

Planning for the expansion or upgrading of a farm operation can also include a number of important business planning and financial management decisions. The Canadian Farm Business Advisory Service provides low cost access to qualified independent business management consultants who can help you assess the financial performance of your current operation, consider your business options, and develop a full set of projections for any planned changes.

The Canadian Farm Business Advisory Service has three program components:

The Farm Business Assessment provides up to five days of consultation with a qualified farm business advisor to assess your current business, look at your business planning options, and develop financial projections for the changes and options you are considering. Eligible producers can access this service for a nominal fee of $100. A list of qualified advisors providing this service in your area is available by contacting Canadian Agri-Renewal Services at the telephone number below.

The second component, Specialized Business Planning Services, is available to producers who require a more specialized business plan for a major business change – such as an expansion plan or farm succession plan. This program offers government assistance of up to 50%, to a maximum of $8,000, to help offset the cost of hiring qualified consulting services.

The third component, Planning and Assessment for Value Added Enterprises, focuses specifically on assessing the feasibility and business planning needed before establishing or expanding ventures designed to add value to agricultural products. This program also provides assistance of up to 50% of the cost of consulting services – to a maximum of up to $10,000 per producer.

Information on any of these business planning services is available by calling Canadian Agri-Renewal Services toll free at 1-866-452-5558. Producers in Northern Ontario can call 1-800-461-6132.

Phase-in Periods

Livestock farms will be required to comply with the NMA as per the following schedule:

Size of Operation (in NU)	Phase-in	NMS/NMP
≤5	Not affected	Not required
Operations ≥ 300 (Existing or Expanding)	September 30, 2005	NMS and NMP
New and Expanding* operations >5 and <300 NU	December 31, 2005	NMS (and NMP if applicable)

** Construction of structures to house farm animals or manure storage or the building of an earthen storage*

When submitting a plan, allow sufficient time for data collection, NMS/P preparation, review and approval. Errors in the NMS/P can result in the NMS/P being returned for clarification or correction and can cause delays in the approval process, thus extending the approval time. Keep in mind that some municipalities may require a NMS/P for farms not covered by the regulation. It is important to check with your municipality to determine whether there are additional requirements that must be met.

Building Permits for Phased-in Farms

The NMA outlines criteria that must be met for building new permanent manure storage facilities. While the NMA, regulations and protocols outline the criteria that must be met before a building permit is issued for a new permanent manure storage facility, there are additional requirements that you must also follow to satisfy the *Ontario Building Code, 1992.*

Engineered Plans and Construction Supervision

Once operations are required to have a NMS/P, there are standards that apply under the regulation for the construction or expansion of permanent nutrient storage facilities. These include external permanent manure storage facilities and in-floor storage structures in the barn. The regulation requires these facilities to be designed and their construction supervised by a professional engineer. The only exception is solid manure storages with a floor area of less than 600 m^2, walls less than 1.0 m high and a volume of less than 600m^3. To obtain a building permit for a permanent liquid nutrient storage facility or a permanent solid nutrient storage facility ≥300 NUs and without a concrete floor, the engineer must submit a site plan, a geotechnical investigation report and detailed construction drawings. The engineer is responsible for inspection during the period of construction.

Site Plan

According to the NMA, a minimum distance must be maintained between the manure storage facility and various water sources.

Minimum Distance between the Permanent Manure Storage and:	Distance (metres)
A drilled well (>15 metres deep)	15
A municipal well	100
Other wells (dug, bored)	30 (90 if the facility will store non-agricultural source materials)
Surface water	50 (as measured along the flow path)
Field drainage tiles	15
Tile inlets	50 (as measured along the flow path)
A flood plain	No building within the 100-year flood line*

** Unless a permit has been obtained under Section 28 of the Conservation Authorities Act*

Surface water includes ponds, wetlands, lakes, rivers, creeks or artificial channels that support aquatic-type plants. A grassed waterway for erosion control is not considered surface water and neither is a dug-out pond as long as it has no connection to surface water (see section 2.(1) and (2) in the regulation for clarification).

The distance is measured from the permanent manure storage facility to the top of the bank, of surface water.

Minimum Distance Separation (MDS II) for Odours

The MDS formulas establish an appropriate distance separation between livestock barns, permanent manure storage facilities and neighbours. These are currently part of provincial land use policy. They are not a requirement of the regulation. Most municipalities have incorporated these guidelines into their zoning bylaws. In these cases, the MDS II distances will have to be met before a building permit is issued. The municipality can provide you with the necessary MDS II calculations based on information you supply.

Site Characterization

A professional engineer or geoscientist must complete a site characterization for a construction or expansion of a permanent liquid nutrient storage facility or a solid permanent nutrient storage facility ≥300 NUs without a concrete floor. The site characterization establishes the hydrogeologic characteristics of the soil and the depth to the groundwater or bedrock. The soil characterization may be done by a lab analysis of a soil sample, an on-site test, or, if the soil is very heavy, a visual assessment by a professional. The results of this investigation will determine the design criteria for a permanent manure storage facility. This chart shows under which circumstances these options must be used.

	Soil Conditions Required between the Tank Bottom and the Bedrock or Aquifer	Tank Design Details
1	• 1.0 m of hydraulically secure soil* or • 1.0 m of soil with more than 15% clay	• Unlined tank, unreinforced floor
2	• 0.5 m of hydraulically secure soil* or • 1.0 m of soil with at least 10% clay	• Unlined tank, reinforced floor
3	• 1.0 m of native undisturbed material or • 1.0 m of compacted granular material	• Lined tank, unreinforced floor
4	• 0.5 m of native undisturbed material or • 0.5 m of compacted granular material	• Lined tank, reinforced floor

**one having a maximum saturated hydraulic conductivity of 1 x 10^{-8} metres per second. This is determined by a lab test of the soil. It is roughly equivalent to a soil with at least a 20% clay content.*

Reinforcing the floor or lining the excavation is costly. Farmers should also consider moving the storage to a more suitable location.

Construction Drawings

Detailed construction drawings of the manure storage (concrete, steel or earthen) and of liquid manure transfer systems are to be provided by a professional engineer. The regulation lists specific design requirements that must be met.

Storage Capacity

The regulation requires a minimum of 240 days of nutrient storage capacity, which can be comprised of:

- the capacity of the storage, less an allowance for accumulated precipitation (for open-top structures) and a 0.3 m freeboard at the top;
- temporary storage of manure in the field (solid manure only); and/or
- off-site or off-farm storage capacity if it is identified/explained in the NMS/P.

The MSTOR computer program can determine the required manure storage volume. It is part of the NMAN program.

Options for periods less than 240 days are provided for situations described in the regulation (e.g. NMS, NMP, broker, animals inside for part of year).

When expanding nutrient storage, farmers may decide to:
- add enough storage to take the expanded operation up to 240 days of storage as per the minimum requirement, or
- build larger (e.g. up to a full year of storage).

A larger tank gives more flexibility and options for spreading times. Under the following conditions, this situation can be an advantage.

- **Wet conditions in fall** – severely restrict spreading opportunities. When followed by a wet spring, this can lead to tanks overflowing when storage capacity is borderline.
- **Light soils (e.g. sandy loam)** – as calculated in NMAN, it may be recommended that spreading be delayed until cooler fall weather, in order to retard the conversion of ammonium to nitrate and reduce the risk of groundwater contamination. If this is the case, 240 days of storage may be insufficient.
- **Circular manure tanks** – the extra storage can prove less costly, as a large economy of scale applies to circular manure tanks.

Consider whether the benefits of increased storage capacity outweigh the added capital cost.

Manure Transfer Systems

On phased-in farms, the pipes and the connectors used to drain pits and transfer the manure to long-term storage must now use gasketed fittings.

Manure Application Issues

There are several considerations that will affect the location of land available for manure application. A reduction in manure application rates may be caused by the buffer zones next to surface water or dug, drilled or municipal wells.

Buffer Zones

A vegetated buffer zone of at least 3 m width must be established next to any top of bank of surface water such as a lake, pond, ditch or creek that supports aquatic-type plants. This does not apply to a grassed waterway or a roadside ditch that has no stream. Within 10 m of this buffer strip, the manure will have to be injected or incorporated within 24 hours unless there is a living crop or at least 30% crop residue.

Water Wells

Manure, non-agricultural source materials and fertilizers are not to be applied closer than the distances shown below:

Well Type	Setbacks for Ag. Source Materials	Setbacks for Non-Ag Source Materials	Setbacks for Commercial Fertilizer/Compost
Municipal well	100 m	100 m	100 m
Drilled well*	15 m	15 m	3 m
Other wells	30 m	90 m	3 m

** Drilled well refers to a well with a minimum depth of 15 m, and a continuous watertight casing with a minimum depth of 6 m. Wells that meet these criteria are normally, but not necessarily, drilled.*

This example is based on a feedlot, owned by John Martin, which currently feeds 300 yearling heifers at the home farm and another 200 heifers in rented facilities. The heifers are brought into the operation at approximately 900 lbs, and are shipped at market weight, approximately 1350 lbs. The plan is to expand the home operation in late 2005 to handle 700 head and have no cattle in rented barns. There will be approximately 2 turns of yearling cattle per year for a total marketing of 1400 fed cattle annually. The farm operator owns 161.9 ha (400 ac) and rents 101.2 ha (250 ac). His total workable is 238.8 ha (590 ac).

Summary of Farm Operation:
Present Operation:

Characteristics	Present Operation	Proposed Operation
Size of Production Unit	-300 yearling heifers on home farm -200 yearling heifers in rented barn -Two turns per year	-700 yearling heifers on home farm -Two turns per year
Manure Storage Capacity	-Manure pack in barns for 120 days -Manure pack in outdoor confinement areas for 30 days	-Covered, solid manure storage for 180 days -Temporary in-field storage for 60 days -Liquid manure storage for OCA runoff
Land Base	-Owns 161.9 ha (400 ac) -Rents 101.2 ha (250 ac) -Workable 238.8 ha (590 ac)	-Owns 161.9 ha (400 ac) -Rents 101.2 ha (250 ac) -238.8 ha (590 ac) workable -216.5 ha (535 ac) available for land application
Soil Type	clay loam	clay loam

John's plans to upgrade his existing cattle operation include:

- having all of the cattle on the home farm;
- upgrading both the outdoor confinement area and the manure storage to facilitate the housing of the 700 heifers on one farm;
- keeping the existing barns – an older renovated bank barn and a pole barn;
- building a new Coverall barn;
- using fence line bunk feeders giving all cattle access to an outside concrete yard;
- installing a holding tank to handle runoff from the open yard; and
- managing the remaining manure as solid, in the straw bedded pack barns.

The proposed farm layout is detailed in Appendix B.

A Beef Feedlot Example

Livestock	Number of Cattle Per NU	Present	After Expansion
Beef Shortkeeps	2.0 animals per NU	Home Farm – 300/2 = 150 NU Rented Farm = 200/2 = 100 NU	Home Farm – 700/2 = 350 NU
		Total 250 NU	

John intends to spread as much of the manure on his own land as he can, and then transfer the remainder to a neighbouring cash cropper who has expressed an interest in receiving the solid manure in the past.

NMS/P: Applicability of the NMA

John's farm falls under the NMA immediately because he is increasing the number of farm animals on the farm unit to a point at which more than 300 nutrient units will be generated on an annual basis. John must complete a Nutrient Management Strategy (NMS) to address the quantity and storage of the manure produced, and a Nutrient Management Plan (NMP) for the spreading of the manure and other nutrients. The strategy must be approved by OMAFRA. The NMP must be prepared by someone that has been certified, however it can be kept on the farm. When the strategy is submitted, the Farm Unit Declaration Form, the Nutrient Management Strategy and/or Plan Sign-Off Form and the Engineer's Commitment Certificate must be attached.

Hint: The key to nutrient management is to balance the nutrients being applied to the land with the amount of nutrients required or removed by the crops. This will be a factor for determining the number of acres required for manure application.

Completing the NMS and NMP

John has the option to complete the NMS and NMP himself or contract someone to develop it. He decides to do it himself to save some money, but also to be able to understand the process and be able to make changes to the strategy and the plan when necessary. He plans to take the *Fundamentals of Nutrient Management, How to Prepare an NMS/P* and the *Regulations and Protocols* courses offered by OMAFRA. Taking these courses and submitting an application for certification allows him to prepare his own strategy and plan.

Municipal Requirements

John's next step is to meet with a municipal building inspector to discuss his building plans. At that meeting he learns that a number of items will be required before obtaining a building permit.

- Minimum Distance Separation II requirements
- Site characterization study for ground water protection
- Siting restrictions for surface water protection
- Engineering plans
- Construction supervision and inspection

Minimum Distance Separation II (MDSII)
As in most municipalities in Ontario, the local zoning bylaw requires the new barn to be sited according to the Minimum Distance Separation II formula. The municipal officials complete the calculations and find the separation distances that will be sufficient.

Engineered Plans and Construction Supervision

John has chosen to hire a local agricultural construction company which will supply the engineered drawings for the liquid manure storage tank and the new Coverall building. The company will also sub-contract the site characterization study to a local geotechnical consulting firm. After expansion John's operation will be generating more than 300 Nutrient Units annually. The geotechnical firm will also be responsible for designing the runoff containment and treatment for the entire home farm. Once John has his Engineer in place, he must complete the Engineer's Commitment Certificate and attach it to his strategy. The Engineer's Commitment Certificate outlines the roles and responsibilities of each Engineer working on the project.

Manure Storage Considerations

John plans to have solid manure from the existing barns, Coverall, and the outdoor confinement areas. He plans to collect runoff from the Outdoor Confinement Area (OCA) and will spread the liquid from this area twice per year. Solid manure will also be spread twice per year after each turn of cattle. The majority of the solid manure storage will be the manure pack within the barns. The yard will also be scraped on a regular basis and pushed up into a corner of the OCA. He may need temporary storage for some of the manure scraped up in the yard.

1) Site Characterization
A professional engineer or professional geoscientist is required to carry out a hydrogeologic or geotechnical investigation of the site of the proposed liquid storage facility. They will identify the soil types and the presence of any aquifer or bedrock within 1.5 m (5 ft) below the excavation of a structure made of concrete or steel and within 2.5 m (8 ft) below the excavation required for an earthen structure. This will also be required for any large livestock farm ≥ 300 NU with solid manure and no concrete floor for the storage.

2) Storage Capacity
John's existing operation uses a pole barn and bank barn with a manure pack that is cleaned out twice per year. The sizes of the existing barns are 24.4 m by 30.5 m (80 ft by 100 ft) and 18.3 m by 36.6 m (60 ft by 120 ft). These two barns will house the maximum number of animals recommended by OMAFRA housing guidelines.

His proposed new Coverall will be 36.6 m by 45.7 m (60 ft by 150 ft).

All 3 barns will be cleaned out between turns of cattle. The first turn goes to market in March/April and the second turn in October/November.

The cattle will have access to a common outside concrete area approximately 61 m by 61 m (200 ft x 200 ft), which is not roofed. Yard scrapings will be stored in a corner of the OCA, and spread on land twice per year when the bedded pack is spread. He plans to use MSTOR

to calculate the size of liquid tank required and NMAN to calculate the number of hectares required for manure application.

John realizes that the biggest challenge to his operation is management of the manure laden runoff from the outdoor confinement area (OCA). A concrete liquid holding tank will be built to handle runoff from the yard, and the collected runoff will be spread twice per year. He will divert as much clean surface water as he can by ensuring eavestroughs are drained away, and up-slope surface water runoff is diverted from entering the OCA. He decided that constructed wetlands or vegetated filter strips were not feasible options for him.

For this operation, John has to make a decision on the type of manure storage he wants. He must have a minimum of 240 days of storage, as required by O. Reg. 267/03 under the NMA. However, because John has opted for solid manure, he can use the barns themselves as storage, and temporary in-field storage. Because one of his fields is located some distance from the home farm, he chooses to use that field for temporary in-field storage of solid manure. This field meets all the requirements for temporary infield storage as set out in O. Reg. 267/03. The field has a:

- minimum depth of unconsolidated soil to bedrock, under the site and within 3 m (10 ft) of the side of the site, of 0.3 m (1 ft);
- minimum depth of soil above the water table, under the site and within 3 m (10 ft) of the side of the site, of 0.9 m (3 ft);
- soil type that is not Hydrological Soil Group AA;
- no area that is subject to flooding once or more every 100 years, according to flood plain mapping provided by a municipality or conservation authority having jurisdiction over the area;
- a slope less than 3 per cent; and
- a flow path that is at least 50 m (164 ft) to the nearest surface water or tile inlets, and is located at least 0.3 m (1 ft) above bedrock.

The field should meet the setback requirements for the following distances:

- not within 45 m (148 ft) of a drilled well that has a depth of at least 15 m (50 ft); and a watertight casing to a depth of at least 6 m (20 ft) below ground level;
- not within 90 m (295 ft) of any other well, other than a municipal well;
- not within 100 m (328 ft) of a municipal well; and
- not within 200 m (656 ft) of a single residence or within 450 m (1,476 ft) of a residential area.

John plans to construct a liquid storage tank for the runoff from the outdoor confinement area. John runs OMAFRA's MSTOR program, which recommends a liquid storage facility that will hold 36,000 cubic feet of liquid manure.

John may also use the temporary in-field storage to accommodate weather challenges. If the soils are light, the "nitrogen index" calculation in NMAN may recommend spreading to be delayed until cooler fall weather. This will retard the conversion of ammonium to nitrate and reduce the risk of groundwater contamination. However, since John has already planned to spread in the fall, he may require either additional storage or additional land for land application.

Outdoor Confinement Area Management Consideration

John must consider whether the outside area for the cattle is an outdoor confinement area or an exercise yard. This depends on the size of the area, and the density of the cattle inside. John outlines the following details about the area.

1) All 700 head of cattle will have access to this area. The cattle will be able to move freely from the pole barn, the bank barn and the Coverall barn;
2) The fence-line feeders will be located on two sides of the confinement area, and all 700 head of cattle will get their feed from them;
3) The fence-line feeders will be the primary source of feed for the animals, providing 90 per cent of their feed. The other 10 per cent will be inside the bank barn and pole barn;
4) The Coverall barn will be located inside the confinement area, and as such, could be considered a roofed portion of the confinement area. However, the cattle still have access to an area that comprises 2880 m^2 (31,000 ft^2 (40,000 ft^2 total - 9,000 ft^2 for the Coverall)) and this area is not roofed;
5) All of the drainage will be directed to the liquid storage tank to be built.

John learns that there are seven criteria to meet in order to be classified as an OCA. The area may have a roof no larger than 20 m^2 (215 ft^2), be comprised of fences, pens or corrals, and be equipped with permanent or portable feeding or watering equipment in the pen area. In addition, grazing and foraging must provide less than 50 per cent of the animals' dry matter intake. The animals in an OCA may have access to other facilities.

In reviewing his operation, John identifies the open area as the outdoor confinement area, as it is bordered by fences and a chute for managing the cattle. He determines that the Coverall is not part of the OCA – it is considered a barn. The cattle will be free to roam between the barns and the OCA. He will be using fence-line feeders for the cattle, and they will not be pastured.

As part of his best management practices, John then considers whether the area is a high density OCA or a low density OCA. He must consider the duration of use of the area, animal density, and in some cases, nutrient units. This has an impact on the management of the area.

John knows that the cattle will be using the area for more than 200 days per year (year-round operation). Therefore, it is considered to be a permanent OCA.

He calculates that there will be 700 animals that will have access to the yard (350 nutrient units), and that this area is 2880 m^2 (31,000 ft^2), or 0.29 ha (0.72 ac). Because this operation will generate more than 120 nutrient units per ha annually, John understands that this will be considered a high density OCA.

John knows that in order to be compliant with the regulations, there must be a flow path from the liquid storage tank to the creek or tile inlets. This flow path must be at least 50 m (167 ft) long, and represent a path for the liquids to flow should the tank fail. John identifies the flow path on the Detailed Concept of a Farm Unit Sketch in Appendix B.

John wonders what will happen in the winter when there is snow in the OCA. He learns that he may choose either land application or storage. If he chooses land application, he must designate a field with less than 3 per cent slope in his plan for the snow. This field must also have a 6 m (20 ft) vegetated buffer along the edge of surface water, and John must increase the setback from the surface water when applying the snow. Spreading restrictions associated with this plan are illustrated in Appendix C. He must also reduce the application rate to one-half of the normal application rate for manure that was otherwise established for the field.

He may also choose storage of the snow containing manure. He can put it into his liquid or solid storage systems, or he can use temporary field storage if he provides for a way of dealing with the melt water runoff from the storage site.

He decides that he does not want to land apply the snow in the winter. He also does not want to put the snow into his liquid storage, as he feels this will not only dilute the nutrients further, it will decrease the days of storage that he has available. He feels that the amount of snow that would be generated would fluctuate, and it would be difficult to estimate volume. He chooses to use temporary field storage, and allow the snow to melt before he removes the remaining manure. There is a field close to the OCA, where he could pile the contaminated snow temporarily. The field is relatively flat in that area and melt water from the pile would follow natural drainage patterns. The site he has chosen is approximately 274 m (900 ft) from surface water.

Beef Production System Changes

According to OMAFRA's housing capacity guidelines, John has slightly more space available per yearling than recommended. However, John feels that the enlarged confinement area and multiple housing systems will result in less stress for the cattle.

John plans on using average amounts of straw bedding in each of the barns. He will be using a mixed-ration feeding program for the cattle. This should not have any impact on the nutrient quality of the manure (the manure should be within the default range in NMAN).
The fence-line feeders will be filled once per day.

Additional information on nutritional strategies to reduce nutrient output can be found on the OMAFRA Web site at www.omafra.gov.on.ca or by calling 1-877-424-1300.

The following is intended to provide an overview of the changes occurring on this farm. It also provides a summary of the production implications of the nutrient management plan associated with the expanded beef feedlot operation.

JOHN MARTIN FARMS LTD.

This is a new Nutrient Management Strategy and Plan, for the expansion of an existing operation above 300 nutrient units.

Applicant:

John Martin Farms Ltd. John Martin, R.R. #25, Stratford, ON, N0E 1K0
Phone 519-111-1234 911 Address: 12345 Emergency Line

John Martin Farms Ltd. is a family owned and operated beef operation located in Downie Township in Perth County. The family is building new facilities, and will be consolidating their operation onto their home farm. Some of the land identified in the Nutrient Management Plan is rented on a long-term lease agreement.

Property Description:

Field Number	Total Size	Total Workable Land	Total Land Available for Nutrient Application
1	50.6 ha (125 ac)	36.4 ha (90 ac)	34.4 ha (85 ac)
2	10.1 ha (25 ac)	8.1 ha (20 ac)	6.1 ha (15 ac)
3	20.2 ha (50 ac)	18.2 ha (45 ac)	17.4 ha (43 ac)
4	20.2 ha (50 ac)	18.2 ha (45 ac)	17.4 ha (43 ac)
5	6.1 ha (15 ac)	4.1 ha (10 ac)	1.6 ha (4 ac)
6	34.4 ha (85 ac)	33.2 ha (82 ac)	32.4 ha (80 ac)
7	40.5 ha (100 ac)	40.0 ha (98 ac)	37.6 ha (93 ac)
8	40.5 ha (100 ac)	34.4 ha (85 ac)	34.0 ha (84 ac)
9	40.5 ha (100 ac)	40.1 ha (99 ac)	39.3 ha (97 ac)

Cropping:

All lands will be in a rotation of corn, soybeans, wheat and hay. The regulation requires that all fields be sampled as part of preparing the NMP (see S.91 of the regulation for sampling requirements for the plan) and that the samples be analyzed by an OMAFRA-accredited laboratory. A good soil-sampling program monitors soil nutrient levels and prevents over-application of nutrients. Appendix D indicates the soil lab test results for this operation.

Verification of actual crop yields is important as the amount of manure that may be applied is partially controlled by the actual yield achieved on a per field basis. Crop rotation records should be maintained, as different crops will result in different rates of manure application.

Field Number	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
1	Corn	Soybeans	Corn	Soybeans	Wheat
2	Wheat	Corn	Soybeans	Wheat	Corn
3	Soybeans	Wheat	Corn	Soybeans	Corn
4	Hay	Hay	Hay	Corn	Soybeans
5	Hay	Hay	Hay	Corn	Soybeans
6	Corn	Soybeans	Corn	Soybeans	Hay
7	Corn	Soybeans	Corn	Hay	Corn
8	Wheat	Corn	Soybeans	Corn	Soybeans
9	Corn	Soybeans	Wheat	Hay	Hay

In addition to the manure, John also applies commercial fertilizers to the corn and wheat crops. After running this crop rotation through his software program, John realizes that he has been over-applying nutrients to the fields. He decides to keep the commercial fertilizer applications in the spring for the corn, and changes his manure application rates. By making more efficient use of his manure applications, and not purchasing the extra commercial fertilizers that he used to use, John realizes that he can meet the agronomic needs of the crops, maintain yields and save money.

Manure Application Considerations:
In reviewing his NMS and NMP, he realizes several restrictions that will reduce the area of land available for manure application.

1) Buffer Zones - A permanently vegetated buffer zone of at least 3 m (10 ft) must be established next to the top of bank of any surface water that supports aquatic-type plants. No manure or commercial fertilizer may be applied in this area (with the exception of commercial fertilizer applied to establish or maintain the buffer zone). This does not apply to a grassed waterway or a roadside ditch that has no stream. There is a creek that runs through several fields on the farm.

The area of the cultivated field adjacent to the buffer zone has restrictions as to application of nutrients. At a minimum, this zone must be 10 m (33 ft) wide, and manure and commercial fertilizers must be injected or incorporated within 24 hours unless there's a living crop or at least 30% crop residue. If the soil fertility levels, particularly phosphorus, are high, this zone may be wider, as determined by the NMAN program. John has taken soil samples on a regular basis, and phosphorus has been within normal levels and should not pose a problem.

2) Water Wells - John has identified all of the wells on his Farm Unit, as well as other wells on neighbouring properties. He knows that the well on the Home Farm is a deep, drilled well with a secure casing, but he is not sure about either the well in the house he rents out or the neighbour's well. He decides to use the increased setback for land application for dug wells, which is 30 m (100 ft). The setback for the drilled well is 15 m (50 ft). These setbacks are illustrated in Appendix A.

3) Method of Application - He plans to use his own tandem spreader to apply the solid manure and will hire a custom applicator to spread the liquid manure. His NMP shows manure application rates, timing of spreading and setback requirements. John does not have any equipment to spread the liquid manure, so he will arrange for a custom applicator to do that for him.

Conclusion

The regulation requires farmers wanting to expand their existing operation or to build a new livestock barn that contains nutrient storage to meet new permit and plan requirements. Know what is required under the regulation. Getting all the facts ahead of time can help prevent costly and unnecessary delays.

Farmers should have a thorough understanding of the NMS/P to implement their plan and maximize the agronomic and economic value of their manure. Regardless of who completes the NMS/P, the farm operator is responsible for implementation of the plan and monitoring of all activity regulated under the plan.

A selection of the most common forms that are part of a NMS/P are included in the Appendices. Appendices A and C are concept sketches of a Farm Unit Sketch and a Field Sketch. The sketches do not show all of the details that may be required for an approved sketch. Specific details required in a sketch can be found in the Nutrient Management Regulation 267/03, as amended, and the associated Nutrient Management Protocol, Parts 5 and 7. These items are also available at www.omafra.gov.on.ca. The following chart (Farmstead or Field Sketch Requirements) lists the items that may or may not be needed to complete the sketches.

The following items may or may not be needed as part of your Farmstead or Field Sketches. Refer to Regulation 267/03, as amended, and the associated protocols to determine your sketch requirements.

Farmstead Sketch

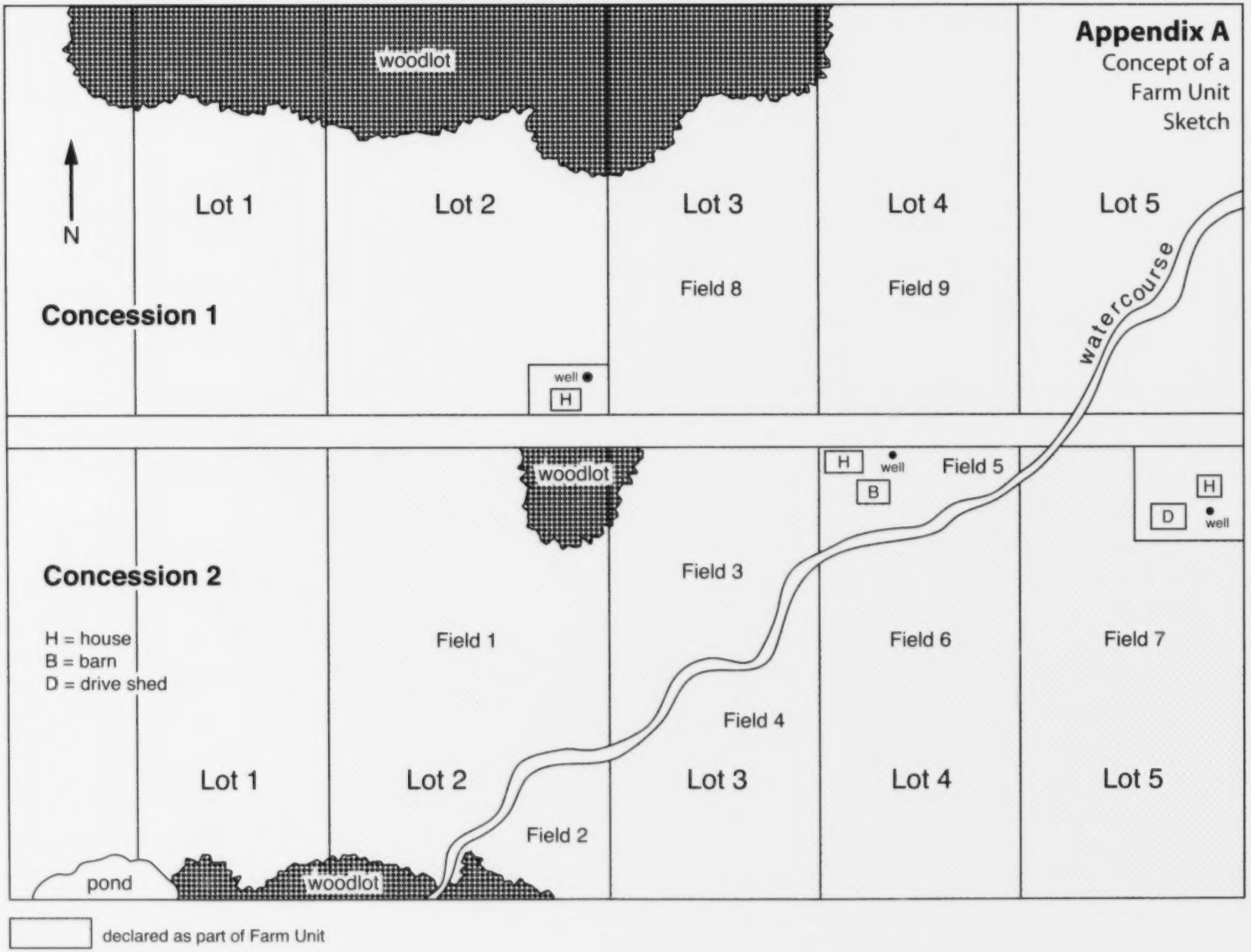
1. North direction arrow
2. Property identifier
3. Label whether the land is owned, controlled (rented or leased) or if there is an application agreement
4. Road names, municipal boundaries, neighbours and other local features
5. Permanent, temporary and proposed generating facilities
6. Permanent, temporary and proposed generating facilities and sites
7. Dimensions of all generating and storage facilities and sites
8. Location of flow paths and physical barriers*
9. Location and distance of wells (includes gas, oil, test and water wells) within regulated distances
10. Location and distance of municipal wells within regulated distances
11. Location and distance of tile inlets
12. Location and distance of surface water

** Including these items as part of a sketch may facilitate the approval of your application by providing details required as part of compliance with Regulation 267/03, as amended.*

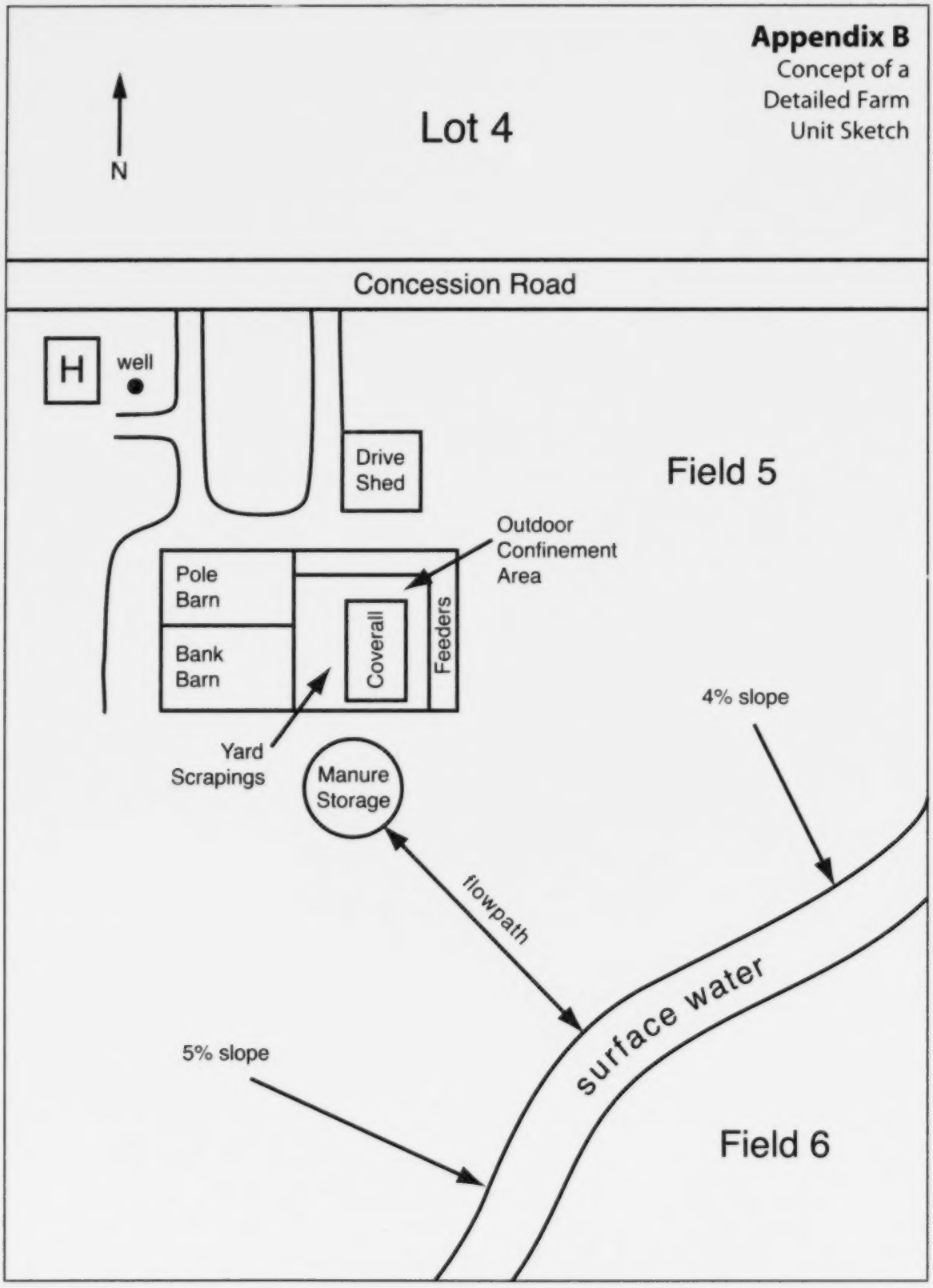
Field Sketch

1. Field identifier (from Farm Unit declaration)
2. Section within a field that has more than one section
3. Identify whether tile drains exist
4. Location of tile inlets*
5. Location of tile outlets*
6. Location of surface water within 150 m (492 ft) of the field*
7. Location of non-agricultural land uses
8. Location of municipal wells within 100 m (328 ft) of a field boundary
9. Location of all other known wells within 90 m (295 ft) of the field boundary if the field is receiving biosolids
10. Location of all other known wells within 30 m (98 ft) of the field boundary if the field is only receiving agricultural source material
11. Setback distances required from all wells*
12. Maximum sustained field slope*
13. Maximum sustained field slopes within 150 m (492 ft) of the top of the bank of all surface water
14. Setback distances required from surface water established by the minimum separation distance and/or the phosphorus index
15. Location of all permanently vegetated buffer zones*

** Including these items as part of a sketch may facilitate the approval of your application by providing details required as part of compliance with Regulation 267/03, as amended.*



Appendices A, B and C are concept sketches of a Farm Unit Sketch and a Field Sketch. The sketches do not show all of the details which may be required for an approved sketch. Specific details required in a sketch can be found in the Nutrient Management Regulation 267/03, as amended, and the associated Nutrient Management Protocol, Parts 5 and 7. These items are available at www.omafra.gov.on.ca.



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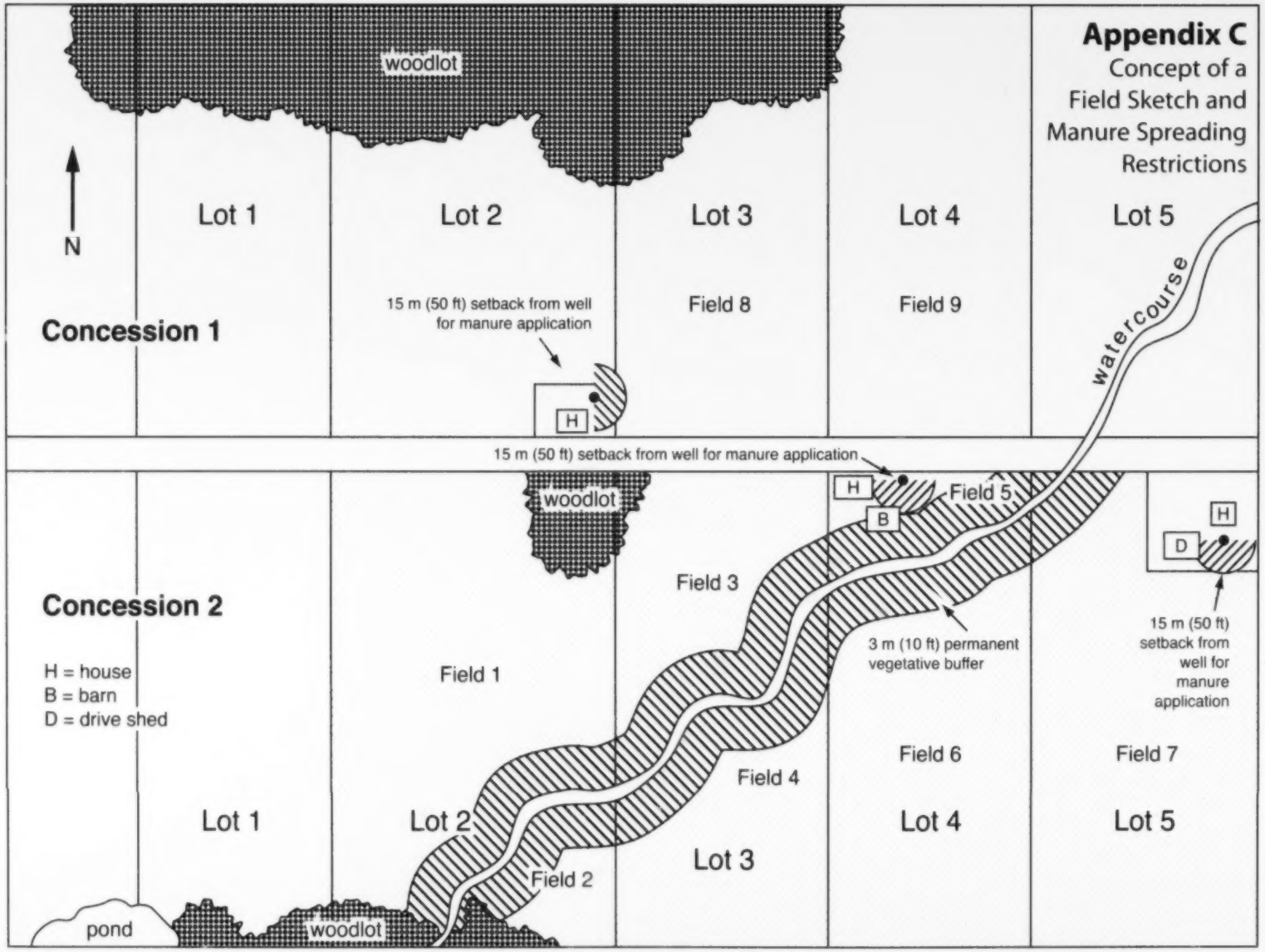

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Soil-Ag
Lab Services
(An OMAFRA-Accredited Lab)

Unit A - 10 Dirt Street
HOMETOWN, Ontario A0A 0A0

Soil Test Report

Date Submitted: May 20, 2005.
Report Date: June 1, 2005.

Customer	*Sample ID*	*Lab#*	*pH*	*BpH*	*Organic Matter %*	*NO_3-N (ppm)*	*$NaHCO_3$ Test Phosphorus (ppm)*	*Potassium (K) (ppm)*	*Magnesium (ppm)*	*Calcium (ppm)*
Martin	F1	574	7.2		3.3		43	199	112	
Martin	F1	575	6.8		3.4		47	200	135	
Martin	F1	576	7.0		3.2		45	213	120	
Martin	F1	577	6.9		3.4		41	202	122	
Martin	F1	578	7.1		3.4		48	198	132	
Martin	F2	579	7.2		3.3		43	197	128	
Martin	F2	580	6.9		3.2		21	201	127	
Martin	F3	581	7.4		2.4		20	278	142	
Martin	F3	582	7.1		3.0		19	200	147	
Martin	F3	583	7.1		2.8		17	189	136	
Martin	F3	584	7.0		3.1		14	192	130	
Martin	F4	585	7.2		3.5		26	210	142	
Martin	F4	586	7.0		3.1		14	192	130	
Martin	F4	587	7.1		3.5		26	210	142	

Soil-Ag
Lab Services
(An OMAFRA-Accredited Lab)

Unit A - 10 Dirt Street
HOMETOWN, Ontario A0A 0A0

Soil Test Report

Date Submitted: May 20, 2005.
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Customer	*Sample ID*	*Lab#*	*pH*	*BpH*	*Organic Matter %*	*NO_3-N (ppm)*	*$NaHCO_3$ Test Phosphorus (ppm)*	*Potassium (K) (ppm)*	*Magnesium (ppm)*	*Calcium (ppm)*
Martin	F5	588	7.2		3.3		18	199	122	
Martin	F6	589	6.8		3.0		22	200	127	
Martin	F6	590	7.5		2.6		25	214	122	
Martin	F6	591	7.1		2.8		27	212	118	
Martin	F6	592	7.2		3.3		19	219	112	
Martin	F7	593	7.4		3.0		22	200	124	
Martin	F7	594	7.4		2.9		26	179	127	
Martin	F7	595	6.9		3.1		28	191	119	
Martin	F7	596	6.8		3.1		22	201	129	
Martin	F8	597	7.4		3.0		23	196	124	
Martin	F8	598	7.2		2.9		27	212	130	
Martin	F8	599	7.3		3.0		24	200	121	
Martin	F8	600	7.0		2.8		23	213	126	
Martin	F9	601	6.9		2.7		23	201	125	
Martin	F9	602	7.1		2.8		27	205	124	
Martin	F9	603	7.4		2.9		26	179	127	
Martin	F9	604	6.9		3.1		28	191	119	

Appendix E - Manure Contingency Plan (Sample) - John Martin Farms Ltd. 2005

John will prepare a contingency plan for spills and several other events. Some of the events that he will include in his contingency plan are:
a) if the custom applicator fails to pump out the tank as planned;
b) more runoff entering the tank than planned;
c) an increase in livestock resulting in more manure than he had planned for; and
d) wet weather which would impact when he could land apply.

He decides that his contingency plan will include additional temporary field storage sites for the solid manure. He also knows of a second custom applicator that he can call if necessary. His neighbour, a cash cropper, also agrees to take extra manure on fields that are not in John's plan.

EMERGENCY CONTACT TELEPHONE NUMBERS:

Spills Action Centre	1-800-268-6060
Ministry of the Environment (Local Office)	1-222-333-4444
Backhoe Operator: Excavations Inc.	1-222-333-4444
Dump Truck Operator: Dumptrucks Ltd.	1-222-333-4444

ON-SITE EMERGENCY EQUIPMENT

Solid manure spreader • Tractor • Skidsteer loader

This contingency plan sets out possible actions that can be taken in the event that this Nutrient Management Strategy and Plan cannot be followed.

STORAGE:

Liquid Runoff From Storage Facility

- This facility should be periodically monitored to ensure that no liquids are escaping the storage facility.
- Liquids in the storage facility could be removed with a vacuum tank and, if conditions will allow, field applied or transferred to a proper storage facility.
- A berm may be constructed to prevent liquids from migrating into surface waterways.

MORE NUTRIENT THAN THE NUTRIENT MANAGEMENT STRATEGY OR NUTRIENT MANAGEMENT PLAN HAVE ADDRESSED

If the application rates for nutrients in a nutrient management plan are not at the maximum, the nutrient management plan can be reviewed to ascertain whether the application rate and possibly the frequency of application can be increased for certain parts of land. Any changes made to the nutrient management plan must be recorded to reflect the actual amount of nutrient applied. In some cases this may mean an updating of the nutrient management plan is necessary.

If the application rates for nutrients in a nutrient management plan are at the maximum, the operator must be prepared to set up alternate uses for the nutrient. Some possibilities include:

- finding a broker who can take the excess nutrient (a Broker Agreement would be required in such circumstances),
- finding an intermediate generator who will accept the excess nutrient (a Nutrient Transfer Agreement would be required in such circumstances)
- acquiring more land through ownership, control or other arrangements.

MORE NUTRIENT THAN THE STORAGE DESIGN CAPACITY

In some cases, generally due to adverse weather conditions, the storage may not be sufficient to store all manure produced. To overcome this problem, the preferred solution would be to land-apply the manure where doing so will not result in an adverse effect.

Options

- Alter your Nutrient Management Plan if the application rates are not already at the maximum and renew if required by the regulation.
- Transfer the nutrient to an available storage facility with excess capacity (a Nutrient Transfer Agreement may be required).
- Work with your broker to take the excess.
- Obtain access to more land through ownership or by means of an Application Agreement or land rental.
- Transfer to a non-regulated farm, and document.
- Utilize temporary in-field storage.
- Use in-barn storage between crop clean outs to extend the capacity of the storage.

AGRICULTURAL OPERATIONS: UNANTICIPATED RELEASE OF NUTRIENTS

These are important issues to be dealt with in a contingency plan due to the adverse effects that can occur. The contingency plan must outline the required equipment, contacts and safety precautions. The idea is to minimize the potential for a spill and if one does occur to ensure that the operator and the employees know what actions to implement.

TO AVOID A SPILL YOU SHOULD:

- calibrate your manure application equipment to apply at rates indicated in your NMP;
- avoid spreading solid manure closer to a watercourse than indicated by your NMP;
- do not apply manure on steep slopes and avoid spreading on snow or prior to rainfall; and
- do not apply manure within 30 m (100 ft) of a dug well or within 15 m (50 ft) of a drilled well.

IF A SPILL DOES OCCUR:

- immediately shut down cause of spill;
- contain the material to minimize opportunity for material to move off site;
- notify the Spills Action Centre;
- clean up the spill and land apply the material in accordance with the Nutrient Management Plan or return the material to storage; and
- re-evaluate manure handling procedures and the effectiveness of the contingency plan.

WEATHER OR EQUIPMENT CONDITIONS IMPEDING PLANNED STORAGE OR APPLICATION

Manure Application Change

- When the timing of a manure application must be changed, adjust the nutrient amounts to reflect the change in application timing.
- In making such changes, you must not exceed the maximum annual nutrient application rate or the maximum rate per application.
- The application rate must comply with the requirements of the Regulation.
- Adjust subsequent applications of nutrients to accommodate the change in timing of the nutrient application and record the change in your NMP.

Crop Change

- Nutrient amounts and formulation should be adjusted (where possible) to account for a change in designated crop.
- If the nutrients have already been applied, the amount and formulation should be adjusted for the next crop to be grown, where possible, to account for the previous crop change.

Commercial Fertilizer Material or Analysis Change

- Where the nutrient composition that is listed in the NMP is altered, the altered material or analysis should be reflected in the NMAN plan.
- Subsequent nutrient applications should reflect these changes to the original NMP.

Ontario Ministry of Agriculture, Food and Rural Affairs

Farm Unit Declaration Form

General Information

A Farm Unit as defined by the *Nutrient Management Act, 2002*, Ontario Regulation 267/03 is the basis for a Nutrient Management Strategy and/or Nutrient Management Plan.

For each Farm Unit there is only one Nutrient Management Strategy and one Nutrient Management Plan.

The Farm Unit must include all land on the property where the nutrients are generated.

The Farm Unit may include other properties.

Contact Information

Name of Farm Unit Operator

Legal Farm Name

Address (Street No., Street Name, Lot, Concession, Township)

City/Town/Village, R.R.	Province	Postal Code
	Ontario	

Telephone No. (incl. Area code)	Operation Identifier (if previously assigned by Ministry)

Location of all the Generating and Storage Facilities that are part of this Farm Unit

	Type of Facility	Lot and Concession	Township	County	Roll Number
1.	☐ Existing ☐ Proposed				
2.	☐ Existing ☐ Proposed				
3.	☐ Existing ☐ Proposed				
4.	☐ Existing ☐ Proposed				
5.	☐ Existing ☐ Proposed				
6.	☐ Existing ☐ Proposed				
7.	☐ Existing ☐ Proposed				
8.	☐ Existing ☐ Proposed				

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Appendix F - Farm Unit Declaration

Operation Information

Operation Identifier *(if previously assigned by Ministry)*

Number of Livestock for Each Generating Facility Listed in the Previous Table.

(Complete the information below using the same row number for each facility in the previous table, and using the three (3) livestock categories listed in the attached Reference Table)

Row No.	Generating Facility	Type of Livestock	Number of Livestock

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Location and Identification of Land that is Part of this Farm Unit

Give each farm or field a unique name that will also be used in the Nutrient Management Plan for this Farm Unit. For properties included under agreements, attach copies of the agreements.

Farm or Field Name	Lot and Concession	Township and County	Former Township (if applicable)	Tillable Area	Roll Number	911 Location	Farm/Field is Owned or Rented (check ☒ one)
							☐ Owned ☐ Rented ☐ Agreement
							☐ Owned ☐ Rented ☐ Agreement
							☐ Owned ☐ Rented ☐ Agreement
							☐ Owned ☐ Rented ☐ Agreement
							☐ Owned ☐ Rented ☐ Agreement
							☐ Owned ☐ Rented ☐ Agreement

A non-agricultural source material is or will be applied to one or more of the properties listed as part of this farm unit: ☐ Yes ☐ No

A municipal well is located within 100 metres of any of the properties listed as part of this farm unit: ☐ Yes ☐ No

☐ Additional facilities listings are attached.

☐ Additional land listings are attached.

Declaration

I, (farm unit operator or authorized agent) declare that the facilities and property referred to on this form comprise the entirety of this Farm Unit. I acknowledge the requirement to complete a Nutrient Management Plan and/or Strategy, and that such Nutrient Management Plan and/or Strategy shall include all of the lands identified on this form.

I hereby warrant that the information contained on this form is true, and that I have authority to complete this document.

Indicate the type of operation that this Farm Unit is in: *(check ☒ one only)*

☐ Corporation *(specify name below)*

☐ Division of a Corporation *(specify name below)*

Name of Corporation **or** Division of Corporation

☐ Partnership *(specify names and addresses of Partners below)*

☐ Sole Proprietorship *(specify name and address of Owner below)*

Names and Addresses of Partners or Name and Address of Owner

Name of Farm Unit Operator/Authorized Agent *(please print)*	Signature	Date *(yyyy/mm/dd)*
Name of Witness *(please print)*	Signature	Date *(yyyy/mm/dd)*

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Reference Table for Determining Type of Livestock

Type of Livestock			
Type	**Sub Type**	**Sub-sub Type**	**Nutrient Units (animals/NU)**
Beef	Backgrounders (7-12.5 months)	Confinement	3
Beef	Backgrounders (7-12.5 months)	Yard/Barn	3
Beef	Cows (includes calves to weaning)	Confinement	1
Beef	Cows (includes calves to weaning)	Deep Bedded	1
Beef	Cows (includes calves to weaning)	Yard/Barn	1
Beef	Feeders (7-16 months)	Confinement	3
Beef	Feeders (7-16 months)	Confinement Bedded Pack	3
Beef	Feeders (7-16 months)	Confinement Total Slats	3
Beef	Feeders (7-16 months)	Yard/Barn	3
Beef	Short Keep (12.5-17.5 months)	Confinement	2
Chickens	Broiler Breeder Growers (females + males transferred out)	Floor System	300
Chickens	Broiler Breeder Layer (females + males transferred in)	Cages	100
Chickens	Broiler Breeder Layer (females + males transferred in)	Litter With Slats	100
Chickens	Broilers	8 Week Cycle	351
Chickens	Broilers	9 Week Cycle	300
Chickens	Broilers	10 Week Cycle	250
Chickens	Broilers	12 Week Cycle	199
Chickens	Layer Pullets (day olds)	Cages	500
Chickens	Layer Pullets (day olds)	Litter	500
Chickens	Laying Hens	Belt And Other Removal System (daily)	150
Chickens	Laying Hens	Belt With Air Drying (daily)	150
Chickens	Laying Hens	High Rise - Stored In Barn	150
Chickens	Laying Hens	Liquid - Stored In Barn	150
Chinchilla	Breeding Females (incl. males/rep/market animals)		320
Dairy	Calves Large Frame		6
Dairy	Calves Medium Frame (Guernsey Size)		7
Dairy	Calves Small Frame (Jersey Size)		8.5
Dairy	Heifers Large Frame	Deep Bedded	2
Dairy	Heifers Large Frame	Free Stall	2
Dairy	Heifers Large Frame	Manure Pack Outside Access	2
Dairy	Heifers Large Frame	Pack Scrape 1 Side	2
Dairy	Heifers Large Frame	Pack Scrape 2 Sides	2
Dairy	Heifers Medium Frame (Guernsey Size)	Deep Bedded	2.4
Dairy	Heifers Medium Frame (Guernsey Size)	Free Stall	2.4
Dairy	Heifers Medium Frame (Guernsey Size)	Pack Scrape	2.4
Dairy	Heifers Small Frame (Jersey Size)	Deep Bedded	2.9
Dairy	Heifers Small Frame (Jersey Size)	Free Stall	2.9
Dairy	Heifers Small Frame (Jersey Size)	Pack Scrape	2.9

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Reference Table for Determining Type of Livestock - continued

Type of Livestock			
Type	**Sub Type**	**Sub-sub Type**	**Nutrient Units (animals/NU)**
Dairy	Milking Age Cows Large Frame	4 Row Free Stall Head To Head	0.7
Dairy	Milking Age Cows Large Frame	4 Row Free Stall Tail To Tail	0.7
Dairy	Milking Age Cows Large Frame	6 Row Free Stall	0.7
Dairy	Milking Age Cows Large Frame	Bedded Pack	0.7
Dairy	Milking Age Cows Large Frame	3 Row Free Stall	0.7
Dairy	Milking Age Cows Large Frame	Sand	0.7
Dairy	Milking Age Cows Large Frame	Tie Stall	0.7
Dairy	Milking Age Cows Medium Frame (Guernsey Size)	Bedded Pack	0.85
Dairy	Milking Age Cows Medium Frame (Guernsey Size)	Free Stall	0.85
Dairy	Milking Age Cows Medium Frame (Guernsey Size)	Tie Stall	0.85
Dairy	Milking Age Cows Small Frame (Jersey Size)	Bedded Pack	1
Dairy	Milking Age Cows Small Frame (Jersey Size)	Free Stall	1
Dairy	Milking Age Cows Small Frame (Jersey Size)	Tie Stall	1
Deer/Elk	Elk Adults (>24 months) (includes unweaned offspring)		2
Deer/Elk	Elk Feeders		6
Deer/Elk	Elk/Red Deer Hybrid Adults (includes unweaned offspring)		4
Deer/Elk	Elk/Red Deer Hybrid Feeders		10
Deer/Elk	Fallow Deer Adults (>24 months) (includes unweaned offspring)		13
Deer/Elk	Fallow Deer Feeders		23
Deer/Elk	Red Deer Adults (>24 months) (includes unweaned offspring)		7
Deer/Elk	Red Deer Feeders		14
Deer/Elk	White Tailed Deer Adults (>24 months) (includes unweaned offspring)		11
Deer/Elk	White Tailed Deer Feeders		21
Ducks	Peking	Breeders	105
Ducks	Peking	Growers	105
Emu	Adults (includes offspring to market size)		12
Fox	Breeding Females (includes rep/market animals/males)		25
Goats	Dairy Does (including unweaned offspring)	Confinement	8
Goats	Dairy Kids	Confinement	
Goats	Feeder Kids (>20 kg)	Confinement	
Goats	Mature Meat Goat (including unweaned offspring)		8

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Reference Table for Determining Type of Livestock - continued

Type of Livestock			
Type	**Sub Type**	**Sub-sub Type**	**Nutrient Units (animals/NU)**
Horses	Large Frame (including unweaned offspring)	Box Stalls	0.7
Horses	Medium Frame (including unweaned offspring)	Box Stalls	1
Horses	Small Frame (including unweaned offspring)	Box Stalls	2
Mink	Breeding Females (includes rep/market animals/males)		90
Ostrich	Adults (includes offspring to market size)		4
Rabbits	Breeding Does (includes bucks/rep/fryers)	1 Tier Cages	40
Rabbits	Breeding Does (includes bucks/rep/fryers)	2 Tier Cages	40
Rabbits	Breeding Does (includes bucks/rep/fryers)	3 Tier Cages	40
Sheep	Dairy and Feeder Lambs	Confinement	20
Sheep	Dairy and Feeder Lambs	Outside Access	20
Sheep	Dairy Ewes & Rams (including unweaned offspring and replacements)	Confinement	6
Sheep	Meat Ewes & Rams (including unweaned offspring and replacements)	Confinement	8
Sheep	Meat Ewes & Rams (including unweaned offspring and replacements)	Outside Access	0
Swine	Feeders	Full Slats	6
Swine	Feeders	Full Slats (wet/dry feeders)	6
Swine	Feeders	Deep Bedded	6
Swine	Feeders	Partial Slats	6
Swine	Feeders	Partial Slats (wet/dry feeders)	6
Swine	Feeders	Solid Scrape	6
Swine	Gilts - Breeders		5
Swine	Sows (dry) (AI)	non-SEW	3.64
Swine	Sows (dry) and Boars	non-SEW	3.5
Swine	Sows (dry) and Boars	SEW	3.33
Swine	Sows with Litters	non-SEW	3.5
Swine	Sows with Litters	SEW	3.33
Swine	Sows, boars, and litters	SEW	3.5
Swine	Weaners	non-SEW	20
Swine	Weaners	non-SEW (wet/dry)	20
Swine	Weaners	SEW	20
Swine	Weaners	SEW (wet/dry)	20

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Reference Table for Determining Type of Livestock - continued

Type of Livestock			
Type	**Sub Type**	**Sub-sub Type**	**Nutrient Units (animals/NU)**
Turkeys	Breeder Toms		
Turkeys	Broilers <6.2kg		133
Turkeys	Hens 6.2-10.8 kg		107
Turkeys	Toms >10.8 kg		76
Turkeys	Turkey Breeder Layers		
Turkeys	Turkey Pullet (0 to 6 weeks)		267
Veal	Grain Fed Veal		6
Veal	Milk Fed Veal		6

NOTE:

For animals not listed in the table above the number of animals per nutrient unit can be calculated by determining the number of animals that will produce the amount of nutrients that give the fertilizer replacement value of the lower of 43 kilograms of nitrogen or 55 kilograms of phosphate as nutrient. Consult with Ministry staff if assistance is required to complete this calculation.

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Attach any additional information on this page.

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Ontario Ministry of Agriculture, Food and Rural Affairs

Nutrient Management Strategy *and/or* Plan Sign-Off Form

Contact Information

Name of Operator

Address *(Street No., Street Name, Lot, Concession, Township)*

City/Town/Village, R.R.	*Province*	*Postal Code*
	Ontario	

Telephone No. *(incl. Area Code)*	Operation Identifier *(if previously assigned by Ministry)*

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Personal information provided in the application is collected under the authority of the *Nutrient Management Act, 2002*, Ontario Regulation 267/03 s. 16, 17 and 24. It will be used for the review, approval, enforcement and audit of the strategy or plan, as the case may be. The information may be made available to external experts contracted by OMAFRA for advice during review and approval or to Ministry of the Environment for advice during review and approval or for enforcement purposes. A public record of approved strategies may be made available to the public by publication in print or over the World Wide Web.

Data from plans and strategies may be aggregated without personal identifiers and made available to researchers for evaluation of the program and other matters related to nutrient and environmental management that may be in the public interest. Questions about this collection should be directed to:

Manager, Approvals, Nutrient Management Branch, Ministry of Agriculture, Food and Rural Affairs, 1 Stone Road West, Guelph ON N1G 4Y2, Telephone: 519-826-6368.

Provision of False Information in this Application

Any false or misleading information submitted by the applicant in this document may result in the invalidation of any approvals or permits granted, and prosecution in accordance to the provisions of the *Nutrient Management Act, 2002*.

Applicant Declaration

I, the applicant (farm unit operator or authorized agent), hereby certify that

a. to the best of my knowledge, excluding unforeseen or uncontrollable circumstances, the information contained in this application provides an accurate description of the existing and proposed operation over the time period covered by this plan or strategy,

b. I understand that in the course of the administration of the Act, the Ministry may provide the information contained in this application to external agents or the Ministry of the Environment for review and analysis, and authorize the Ministry to provide this information to its external agents, and authorize its external agents or the Ministry of the Environment to collect this information from the Ministry, and

c. I, the applicant, ☐ authorize *OR*
☐ do not authorize
the individual who prepared this strategy and/or plan as noted below, to act as my agent for the purposes of obtaining approval for this application, and to provide the Ministry, or its agents, any information required in the review of this application.

Name of Applicant *(please print)*	Signature	Date *(yyyy/mm/dd)*

Declaration of Individual who Prepared this Strategy and/or Plan

I, the individual who prepared this strategy and/or plan, hereby certify that based on relevant information provided in good faith and excluding unforeseen or uncontrollable circumstances, the recommendations contained in this application will, if implemented, result in acceptable management practices in accordance to the regulation and protocols under the *Nutrient Management Act, 2002*.

Certification No. *(if applicable)*

Name of Individual who Prepared this Strategy and/or Plan *(please print)*	Signature	Date *(yyyy/mm/dd)*

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Ontario Ministry of Agriculture, Food and Rural Affairs

Engineer's Commitment Certificate

Project Information

Name of Project

Address (Street No., Street Name, Lot, Concession, Township)

City/Town/Village, R.R.	*Province*	*Postal Code*
	Ontario	

Applicant Declaration

This is to certify that I understand that under the *Nutrient Management Act, 2002*, I am required to retain engineering services for specific projects and situations.

Name of Owner *(please print)*	Signature	Date *(yyyy/mm/dd)*

Therefore I have retained the following Professional Engineer,

Name of Professional Engineer *(please print)*	Signature	Date *(yyyy/mm/dd)*

to undertake the overall coordination and completion of the engineering design and general review of construction; ***or***

I have retained the following Professional Engineers to provide engineering services for the following components of the engineering design and review of construction.

Project Components Information

Design Components	Engineer's Information	
Site Characterization* - sub-surface information, soil properties, water table and bedrock location (if critical).	Name of Engineer	Telephone No. *(incl. Area Code)*
	Address	Signature
Liquid Storage Facilities - drawings and design details for liquid storage construction.	Name of Engineer	Telephone No. *(incl. Area Code)*
	Address	Signature
Solid Storage Facilities - drawings and design details for solid storage construction (if applicable).	Name of Engineer	Telephone No. *(incl. Area Code)*
	Address	Signature

Design Components	Engineer's Information	
Earthen Storage Facilities - drawings and design details for earthen storage construction.	Name of Engineer	Telephone No. *(incl. Area Code)*
	Address	Signature
Synthetic or Natural Liner - design details, including details of inspection and testing of seams.	Name of Engineer	Telephone No. *(incl. Area Code)*
	Address	Signature
Transfer Systems - drawings and design details for connections, materials, etc.	Name of Engineer	Telephone No. *(incl. Area Code)*
	Address	Signature

* Geoscientist retained to perform a Site Characterization evaluation must be a member of the Association of Professional Geoscientists of Ontario.

Acknowledgements

Special thanks to all those who have contributed to this publication by lending their expertise and resources.

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Kevin McKague, Dennis Martin, Michael Payne and Jackie Forbes, Ontario Ministry of Agriculture, Food & Rural Affairs and Franklin Kains, Consultant.

Technical Review:
OMAFRA Beef Team, Dale McComb, Sharon Johnston and Harold House, Ontario Ministry of Agriculture, Food & Rural Affairs and Wayne Currah, TRILLIUM Agronomics.

Editorial Coordinators:
Arlene Robertson and Betty Summerhayes, Ontario Ministry of Agriculture, Food & Rural Affairs.

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ISBN: 0-7794-8526-2
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01-06-2.5M

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